ORIGINAL

9101 23 AM E

LAW OFFICES

COHN AND MARKS

STANLEY S. NEUSTADT	WAYNE COY, JR.	OF COUNSEL
STANLEY B. COHEN	N. FRANK WIGGINS	MARCUS COHN
RICHARD M. SCHMIDT, JR.	MARK L. PELESH	LEONARD H. MARKS
JOEL H. LEVY	J. BRIAN DE BOICE	
ROBERT B. JACOBI	ROBERT ST. JOHN ROPER	
ROY R. RUSSO	ALLAN ROBERT ADLER	*MEMBER ILLINOIS BAR ONLY
RONALD A. SIEGEL		
IAN D. VOLNER		
LAWRENCE N. COHN	LAUREN M. BLOOM	
RICHARD A. HELMICK	SUSAN V. SACHS	
BRIAN M. MADDEN	APRIL McCLAIN-DELANEY	
	JOHN R. PRZYPYSZNY*	

SUITE 600
1333 NEW HAMPSHIRE AVENUE, N. W.
WASHINGTON, D. C. 20036-1573

TELEPHONE (202) 293-3860
CABLE COMAR-WASHINGTON, D. C.
TELECOPIER (202) 293-4827

DIRECT DIAL: (202) 452-4836

January 23, 1991

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
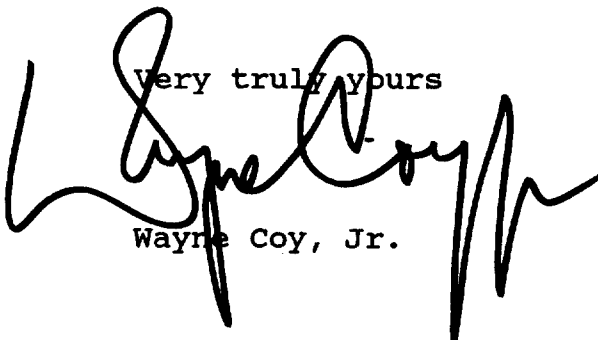Washington, D.C. 20554

    Re: BPED-890619MH

Dear Ms. Searcy

Transmitted herewith, on behalf of KCBX, Inc., applicant for a new
noncommercial FM station at San Luis Obispo, California, are the
original and two (2) copies of an amendment certifying compliance
with the FCC's RF Radiation standards.

Since the applicant is a non-profit entity, and the application
concerns a non-commercial facility, no filing fee is required.

Should you have any questions regarding this filing, please contact
the undersigned.

                              Very truly yours

                              Wayne Coy, Jr.

KCBX
CENTRAL COAST PUBLIC RADIO

January 18, 1991

Federal Communications Commission
Washington, D.C.

REFERENCE: FCC File No. BPED-890619MH

The attached engineering report constitutes an amendment
to the above mentioned application.

Thank you.

Sincerely,

Frank R. Lanzone, Jr.
President/KCBX, INC.

NEW FM STATION
89.3 MHZ, CHANNEL 207B
SAN LUIS OBISPO, CALIFORNIA

STATEMENT OF WILLIAM F. HAMMETT, CONSULTING ENGINEER

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by KCBX, Inc., the applicant for a new noncommercial educational FM station to serve San Luis Obispo, California, on Channel 207B, to prepare this engineering statement in response to a letter from the FCC, reference 8920-MJF, requesting additional information concerning the proposed new operation (FCC File No. BPED-890619MH).

PROTECTION OF NEARBY STATIONS

In its letter, dated December 21, 1990, the FCC staff notes that the 1985 version of FCC Form 340, on which the pending application was submitted, does not include the following question from the current version of the Form:

> Are there: (a) within 60 meters of the proposed antenna, any proposed or authorized FM or TV transmitters, or any nonbroadcast (except citizens band or amateur) radio stations; or (b) within the blanketing contour, any established commercial or government receiving stations, cable head-end facilities, or populated areas; or (c) within ten (10) kilometers of the proposed antenna, any proposed or authorized FM or TV transmitters which may produce receiver-induced intermodulation interference?

Since the proposed site is at the Cuesta Ridge antenna farm, it is not surprising that (a) within 60 meters of the proposed antenna are several FM and TV stations; (b) within the blanketing contour (0.9 kilometers to the 115 dBu contour) are the receive antennas for several TV translator stations; and (c) within 10 kilometers of the proposed antenna are FM and TV stations with which, in theory, the proposed frequency could combine to create receiver-induced intermodulation interference. However, an analysis of the possible intermodulation products indicates that such interference is not likely to occur. Moreover, as requested by the FCC staff, the applicant "specifically accept[s] full responsibility for the elimination of any objectionable interference (including that caused by receiver-induced or other types of modulation) to facilities in existence or authorized or to radio receivers in use prior to grant of this application."

COMPLIANCE WITH ANSI C95.1-1982

I have on two separate occasions conducted measurements at the Cuesta Ridge antenna farm of the RF power density levels at the site. Most recently, I measured on July 18, 1990, the exposure conditions existing at the base of the tower from which the proposed new station is to operate. I found that broadband RF power density levels there were well below the most restrictive ANSI C95.1-1982 limit of 1 mW/cm^2 for exposures of unlimited duration, both for ambient fields and for localized fields.

These findings confirm the calculated exposure conditions, which take into account all broadcast sources at the site. Figure 1 attached describes the integration of the formulas given in FCC Office of Science and Technology Bulletin No. 65 (October 1985) into a computer program which calculates at specific points on an arbitrary grid the total RF exposure conditions. Figure 2 attached is the output from this program, showing the height, power, and antenna information for each station, this data having been taken from the FCC files and confirmed by field inspection. Figure 2 also shows the low levels of calculated RF exposure conditions. In fact, the highest total field is calculated to be 0.29 mW/cm^2, or 29% of the ANSI limit, for the simultaneous operation of all stations. The maximum calculated contribution of the proposed new station is 0.14 mW/cm^2, just 14% of the ANSI limit.

The applicant reaffirms its intention to perform field surveys of RF exposure conditions to verify compliance with the ANSI Standard C95.1-1982 upon completion of the proposed construction and to institute any safety measures found necessary to achieve compliance. In addition, although the tower base is already fenced to preclude public access to the tower, it is specifically stated "that, if required, there is sufficient distance from the tower base to construct a fence to prevent exposure to radiofrequency radiation" in excess of the ANSI guidelines.

CONCLUSION

It is my considered professional opinion that the operation of the new FM station as proposed in this application will be in compliance with all applicable Rules of the FCC.

LIST OF FIGURES

In carrying out these engineering studies, the following attached figures were prepared under my direct supervision:

1. Description of RF power density calculation algorithm
2. Output from calculation program showing RF exposure conditions.
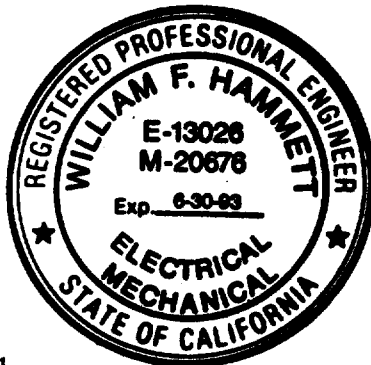
HAMMETT & EDISON, INC.
Consulting Engineers

William F. Hammett, P.E.

January 17, 1991

AFFIDAVIT

State of California   )
) ss:
County of San Mateo)

        William F. Hammett, being first duly sworn upon oath, deposes and says:

        1. That he is a qualified Registered Professional Engineer, holds California Registrations Nos. E-013026 and M-020676, which expire on June 30, 1993, and is a principal in the firm of Hammett & Edison, Inc., Consulting Engineers, with offices located near the city of San Francisco, California,
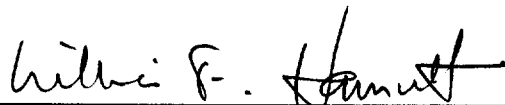
        2. That he graduated from Dartmouth College with a degree in Engineering Sciences in 1977 and from the University of Illinois with a degree of Master of Science in 1978, has completed two years of employment by the Standard Oil Company and five years by Dean Witter Reynolds in various engineering, computer, and management capacities, and has been associated with the firm of Hammett & Edison, Inc., since 1985,

        3. That the firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by KCBX, Inc., the applicant for a new noncommercial educational FM station to serve San Luis Obispo, California, on Channel 207B, to prepare this engineering statement in response to a letter from the FCC, reference 8920-MJF, requesting additional information concerning the proposed new operation (FCC File No. BPED-890619MH),
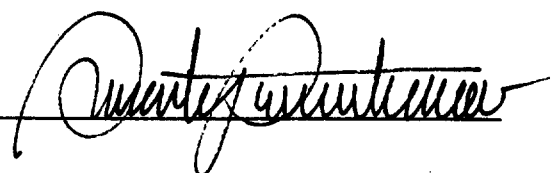
        4. That such engineering work has been carried out by him or under his direction and that the results thereof are attached hereto and form a part of this affidavit, and

        5. That the foregoing statement and the report regarding the aforementioned engineering work are true and correct of his own knowledge except such statements made therein on information and belief, and as to such statements, he believes them to be true.

                                                   _____
                                              William F. Hammett, P.E.

Subscribed and sworn to before me this 17th day of January, 1991
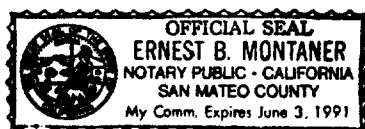
DETERMINATION BY COMPUTER
OF ANSI COMPLIANCE CONDITIONS

The U.S. Congress has required of the FCC that it evaluate its actions for possible significant impact on the environment. In General Docket 79-144, the FCC adopted the American National Standards Institute Standard C95.1-1982, "American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz". The guidelines in this Standard are now applicable to all FCC-licensed broadcast stations. The most restrictive guideline is 1 mW/cm^2, applying at FM and VHF television frequencies; at UHF television frequencies, the guideline increases with increasing frequency, up to 5 mW/cm^2, applying at microwave frequencies and above. The exposure guideline at AM frequencies is 100 mW/cm^2. Exposures are to be averaged over a six-minute period, allowing, for example, a two-minute exposure to fields three times the limit if the remainder of the six-minute period does not include any significant exposure.

The FCC Office of Science and Technology Bulletin No. 65 (October 1985) gives the formula for calculating power density from an individual radiation source:

$$\text{power density} \quad S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times [0.4 \times VERP + AERP]}{4\pi D^2}, \text{ in mW/cm}^2,$$

where VERP = total peak visual ERP (all polarizations), in kilowatts,
AERP = total aural ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, unitless, and
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 reflects the increase in power density due to ground reflection, assuming a field reflection coefficient of 1.6 (1.6 × 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 0.4 converts peak visual ERP to an average RMS value; for FM stations, of course, the value of VERP is zero. The factor of 100 in the numerator converts to the desired units of power density.
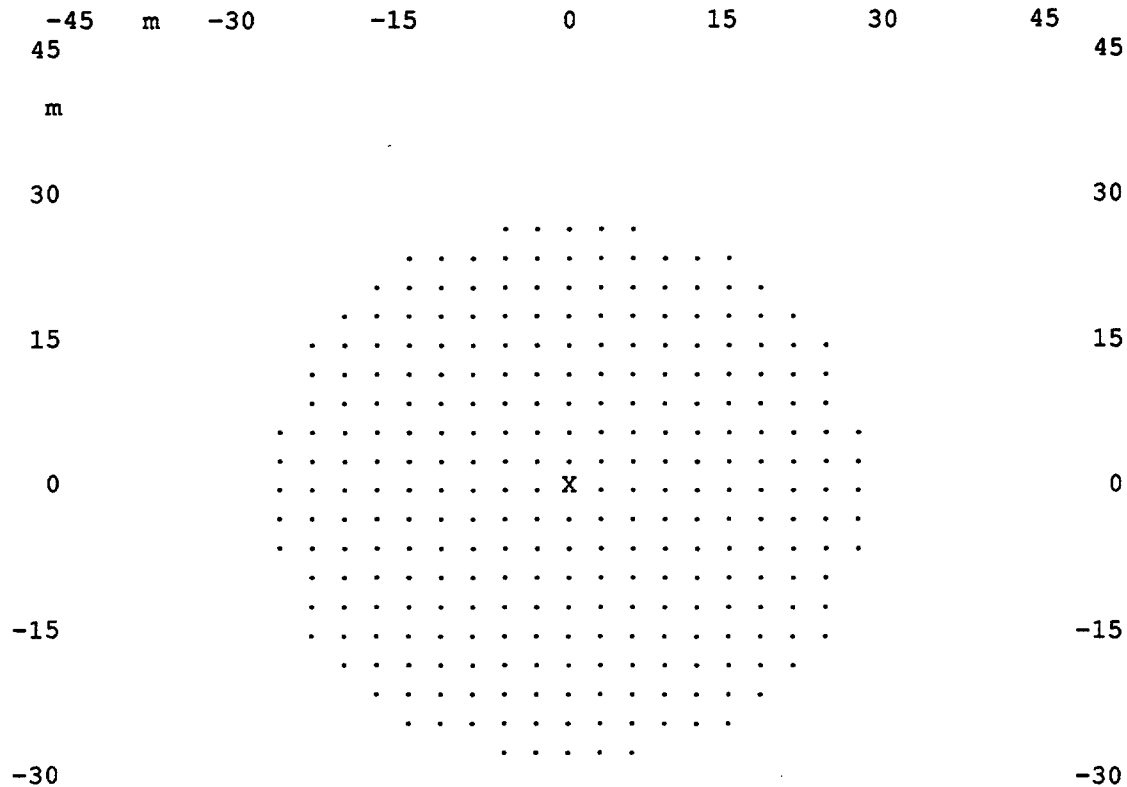
This formula has been built into a computer program by Hammett & Edison that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of the actual terrain at the site to obtain more accurate projections. The calculated results are shown on a plat of the calculation grid as fractions of the appropriate ANSI limit. A dash on a grid point, if it occurs, indicates that the point does not have an entry in the terrain file and has been omitted from the calculations. Tabulated below the plat is a summary by source of the following operating conditions:

Column	Description
call	source's call letters, if a broadcast station, or other identifier
ch	source's channel of operation
location	coordinates of the source on the arbitrary horizontal calculation grid
ANSI	the appropriate ANSI guideline, in mW/cm^2, for the frequency of the source
kW ERP	maximum effective radiated power, in kW, of the source
x F	ERP factor, equal to the number of polarizations (for FM) or the sum (for TV) of 0.4 plus the fraction of aural power
ht, m	elevation of the radiation source, in meters, typically above ground or above sea level
patterns H-V	reference information for horizontal and vertical radiation patterns of the source antenna. Horizontal: OMNI is the conservative assumption. Vertical (FM): FMn-t refers to an antenna of n bays of EPA-Type t elements [EPA Engineering Assessment, April 1985], conservatively limited to a minimum of 15% relative field. Vertical (TV): VHFSTD indicates the use of a typical vertical pattern with a relative field of 20% at angles below -30° from horizontal; UHFSTD indicates a relative field of 10% at those angles. Any other entry on either side of this column indicates the use of a specific horizontal and/or vertical pattern.
@base	calculated power density of that source alone at base of its tower; -0.000 indicates that the tower is off the grid
@max	maximum calculated power density for that source alone at any of the grid locations.

Hammett & Edison, Inc.
Consulting Engineers

FIGURE 1

NEW FM STATION
89.3 MHZ, CHANNEL 207B
SAN LUIS OBISPO, CALIFORNIA

CALCULATED
RF POWER DENSITY
EXPOSURE CONDITIONS

BASE OF KSBY-TV TOWER

calculations performed according to OST Bulletin No. 65
results expressed as fraction of ANSI C95.1-1982 Standard

```
   -45   m   -30        -15          0        15         30         45
   45                                                                          45

    m


   30                                                                          30

                                      .  .  .  .  .
                                 .  .  .  .  .  .  .  .  .  .
                              .  .  .  .  .  .  .  .  .  .  .  .  .
                           .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
   15                   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .        15
                        .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    0             .  .  .  .  .  .  .  .  X  .  .  .  .  .  .  .  .  .  .         0
                  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                        .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  -15                   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .       -15
                           .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
                              .  .  .  .  .  .  .  .  .  .  .  .  .
                                 .  .  .  .  .  .  .  .  .  .  .
                                      .  .  .  .  .  .
  -30                                                                         -30




  -45                                                                    -45
    -45          -30          -15          0        15         30         45
```

```
     calculation height above site:  2 m
  call   ch  location   ANSI   kW ERP,x F   ht,m   patterns H/V    @base    @ max
  KSBY    6    0    0   1.00   100.0 0.41    131    OMNI/VHFSTD     0.003    0.003
  KLZZ  267    0    0   1.00     3.4 2.00    113    OMNI/FM3-1      0.009    0.011
  KKUS  251    0    0   1.00     3.6 2.00     73    OMNI/FM3-2      0.003    0.007
  KDDB  223    0    0   1.00     4.4 2.00     61    OMNI/FM3-2      0.006    0.012
  KCBX  211    0    0   1.00     4.9 2.00     21    OMNI/FM4-4      0.059    0.126
  NEW   207    0    0   1.00     5.3 2.00     21    OMNI/FM4-4      0.064    0.136
```

©1991 Hammett & Edison, Inc.

```
legend for fields:  below .05|.05 to .5|.5 to 1.0||1.0 to 5 | above 5
(fraction of ANSI)     blank  |    .    |    :      ||    o     |    O
```

Hammett & Edison, Inc.
Consulting Engineers

FIGURE 2